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Please find below and/or attached an Office communication concerning this application or proceeding.

AS-5

Office Action Summary

Application No.	Applicant(s)
10/014,570	SCHARFE et al
Examiner	**Group Art Unit**
J. DOTE	1756

—Th MAILING DATE of this communication appears on th cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

☒ Responsive to communication(s) filed on 4/9/03.

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

☒ Claim(s) 1-27 is/are pending in the application.

Of the above claim(s) 27 is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-9, 11-26 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner

☒ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Pri rity under 35 U.S.C. § 119 (a)-(d)

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).

☐ All ☐ Some* ☐ None of the:

☐ Certified copies of the priority documents have been received.

☐ Certified copies of the priority documents have been received in Application No. _____.

☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____.

Attachment(s)

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 2

☐ Int rview Summary, PTO-413

☒ Notice of Reference(s) Cited, PTO-892

☐ Notice of Informal Pat nt Applicati n, PTO-152

☐ Notice of Draftsperson's Pat nt Drawing R vi w, PTO-948

☐ Oth r _____

Office Action Summary

1. Applicants' election with traverse of the invention in Group I, claims 1-26, in Paper No. 4, filed Apr. 9, 2003, is acknowledged. The traversal is on the ground(s) that the product claims are sufficiently related to the process claim. Applicants further assert that "an undue burden would not be placed on the examiner to simultaneously examine and process these claims" (original emphasis).

This is not found persuasive because applicants have not controverted the reasons set forth in the restriction requirement that the inventions of Groups I and II are patentably distinct. The searches for the imaging member and the process of using are not co-extensive. A search for the imaging member does not require a search in the process-of-using subclass 399/168. The distinct and exclusive mandatory searches for the imaging member in Group I and the process in Group II, and the distinct issues of patentability establish an undue burden on the Office.

The requirement is still deemed proper and is therefore made FINAL.

Claim 27 has been withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicants have timely traversed the restriction requirement in Paper No. 4.

2. The disclosure is objected to because of the following informalities:

(1) The specification at page 5, lines 8-10, discloses a photoconductive imaging member wherein the reference labels "a" through "d" have particular numerical values. However, the specification previously discloses that the labels "a" through "d" are the mole fractions of the repeating monomer units of the polymer represented by formula III. See the specification, page 4, line 4, to page 5, line 2. There is no disclosure of a photoconductive imaging member described by the labels "a" through "d."

(2) The specification at page 5, lines 10-17, discloses a photoconductive imaging member wherein A, B, D, and F may present particular organic groups. However, the specification previously discloses that A, B, D, and F represent the segments of the polymer backbone in the polymer represented by formula III. See the specification, page 4, lines 4-8. There is no disclosure of a photoconductive imaging member described by the reference labels A, B, D, and F.

(3) The specification at page 6, line 15, discloses the charge transport polymer polysebacoyl-TBD (PSEB). It is not clear what is the polymer PSEB. The specification neither defines nor discloses the chemical structure of the polymer PSEB.

(4) The specification at page 11, lines 4-6, discloses that

the cross-linked silicone contains crosslinking of "about 6J to about 9J." The specification does not define the terms "6J" and "9J."

(5) The use of trademarks, e.g., Vitel-PE 100 [sic: VITEL-PE 100] at page 13, line 28, has been noted in this application. The trademarks should be capitalized wherever they appear and be accompanied by the generic terminology. This example is not exhaustive. Applicants should review the entire specification for compliance.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

(6) In the only example in the specification, the hole blocking layer is said to comprise a polymer of Formula (III). See the specification, page 18, line 26, to page 19, line 1. The specification at page 3, line 26, to page 4, line 5, discloses that the polymer represented by Formula III is obtained by reacting a polymer of Formula I with an organosilane of Formula II. However, in the example, the hole blocking layer is obtained from a solution comprising 3-aminopropyltrimethoxy-silane. There is no disclosure of reacting the silane compound with a polymer of Formula I. Thus, it is not clear how the blocking layer in the example comprises a polymer of Formula III.

It is noted that the example is not within the scope of the presently claimed invention because it does not comprise a cross-linked silicone rubber and a resilient, electrically insulating overcoating layer, as required in instant claims 1 and 2.

Appropriate correction is required.

3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

(1) In claims 1 and 2, the recitation "a resilient, electrically insulating overcoating layer" lacks antecedent basis in the specification. See page 3, lines 18-20, of the specification, which discloses a "resilient, electrically insulating overcoating layer comprising an elastomer." The layer recited in instant claims 1 and 2 is broader than the disclosed overcoating layer because it includes overcoating layers that do not comprise an elastomer.

(2) In claim 15, the recitation "charge transport layer . . . contains from about 1 to about 12 carbon atoms" lacks antecedent basis in the specification. See page 10, lines 4-5, of the specification, which discloses that the "arylamine alkyl [i.e., the alkyl group X in the formula at page 10, line 1] contains from about 1 to about 12 carbon atoms." There is no

disclosure of a charge transport layer comprising from about 1 to about 12 carbon atoms as recited in instant claim 15.

(3) In claim 16, the recitation "charge transport layer . . . contains from about 1 to about 5 carbon atoms" lacks antecedent basis in the specification. See page 10, line 6, of the specification, which discloses that the "arylamine alkyl [i.e., the alkyl group X in the formula at page 10, line 1] contains from about 1 to about 5 carbon atoms." There is no disclosure of a charge transport layer comprising from about 1 to about 5 carbon atoms as recited in instant claim 15.

(4) In claim 17, the recitation "a charge transporting polymer" lacks antecedent basis in the specification. See page 6, lines 14-15, of the specification, which discloses a charge transporting polymer comprising polyethercarbonate (PEC) or polysebacoyl-TBD (PSEB). The term "a charge transporting polymer" recited in instant claim 17 is broader than the disclosed charge transporting polymer because it includes other charge transporting polymers that are not PEC or PSEB.

(5) The entire recitations in claims 22 and 23 lack antecedent basis in the specification. The specification at page 17 describes charge blocking layers interposed between the conductive support and the photogenerating layer.

(6) In claim 26, the recitation "overcoating layer is substantially transparent" lacks antecedent basis in the

specification. See page 6, lines 22-24, of the specification, which discloses a crosslinked dimethyl polysilane hydrolyzate overcoat layer which is substantially transparent to activating radiation, electrically insulating, and having a thickness of from about 5 micrometers to about 10 micrometers. The overcoating layer recited in instant claim 26 is broader than the disclosed crosslinked dimethyl polysilane hydrolyzate overcoat layer, because it includes overcoating layers that do not comprise the crosslinked dimethyl polysilane hydrolyzate and that have a thickness of from about 5 micrometers to about 10 micrometers.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 4, 5, 11, and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 4 and 5 are indefinite in the phrase "the charge injecting surface" (emphasis added) for lack of antecedent basis.

Claim 1 does not recite the presence of a charge injecting surface.

Claim 11 is indefinite for the following reasons:

(1) The phrase "with the substituent being halogen, alkoxy, aryloxy, amino, and the like" (emphasis added) is indefinite because it is not clear what is the meaning of the term "the like." Neither claim 11 nor the instant specification teaches what properties make a group "like" or "not like" one of the recited substituent groups. It is not clear to what the term "the like" refers.

(2) The phrase "a photoconductive imaging member, wherein a is from about 0 to about 0.95, b is from about 0.001 to about 0.50, c is from about 0 to about 0.50, and d is from about 0.01 to about 0.95" (10 lines from the end of the claim; emphasis added) is indefinite for lack of unambiguous antecedent basis. Claim 1 does not recite a photoconductive imaging member. Rather, claim 1 merely recites "an imaging member." Moreover, it is not clear how a photoconductive imaging member is described by the terms "a" through "d" because claim 11 previously recites that those terms represent the mole fractions of the repeating units of the polymers of formula I and III, and there is no necessary requirement that the "photoconductive imaging member" contains said polymer of formula III.

(3) The phrase "a photoconductive imaging member, wherein A is selected from the group of . . . B, D, and F are independently . . ." (emphasis added) is indefinite for lack of unambiguous antecedent basis. Claim 1 does not recite a photoconductive imaging member. Rather, claim 1 merely recites "an imaging member." Moreover, it is not clear how a photoconductive imaging member is described by the terms "A, B, D, and F" because claim 11 previously recites that those terms represent the segments of the polymer backbone of the polymers of formula I and III, and there is no necessary requirement that the "photoconducting imaging member" contains said polymer of formula III.

(4) The phrase "A is selected from the group of divalent linkages, such as alkylene, arylene, alkoxycarbonylalkylene, alkoxylcarbonylarylene, and the like" (emphasis added) is indefinite for improper Markush language. Proper Markush language is "R is selected from the group consisting of . . . and . . ." or "R is . . . or . . ." MPEP 2173.05(h) (8th ed., Rev. 1, Feb. 2003). Applicants are using a combination of both phrases. The language "such as" and "the like" is not closed. Thus, it appears that applicants intend the recited Markush group to contain other additional components. However, Markush groups must be completely specified. Thus, it is not clear what is the scope of the instant claim.

(5) The phrase "B, D, and F are independently selected from the group consisting of, for example, . . . " (emphasis added) is indefinite for improper Markush language. The language "for example" is not closed. Thus, it appears that applicants intend the recited Markush group to contain other additional components. However, Markush groups must be completely specified. Thus, it is not clear what is the scope of the instant claim.

Claim 19 is indefinite in the phrase "the charge transporting polymer is polysebacoyl-TBD (PSEB)" (emphasis added) for lack of unambiguous antecedent basis. Claim 15, from which claim 19 depends, does not recite the presence of a charge transporting polymer, but recites that the charge transport layer contains from about 1 to about 12 carbon atoms. It is not clear how the polymer PSEB only contains from about 1 to about 12 carbon atoms. The phrase is further indefinite because neither claim 19 nor the specification defines the term "polysebacoyl TBD." It is not clear what is the chemical composition of the polymer "polysebacoyl TBD."

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 15 and 16 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Instant claim 15 recites a charge transport layer which contains from about 1 to about 12 carbon atoms.

Instant claim 16 recites a charge transport layer which contains from about 1 to about 5 carbon atoms.

The specification does not teach how to make said charge transport layers. The specification discloses that the charge transport layer may comprise aryl amine molecules such as those represented by the formula disclosed at pages 6 and 10 dispersed in a resinous binder. See page 6, lines 5-11, and page 10, lines 1-6. The aryl amine of the formula by itself contains at a minimum 36 carbon atoms. The specification further discloses that the charge transport layer may comprise a charge transporting polymer comprising polyethercarbonate (PEC) or polysebacoyl-TBD (PSEB). Page 6, lines 14-15. The polymer PEC comprises more than 5 or 12 carbon atoms. There is no disclosure of how to make and use a charge transport layer containing from about 1 to about 5 carbon atoms, or from about 1 to about 12 carbon atoms. Thus, it would require undue experimentation for one of ordinary skill in the art to make the charge transport

layer containing from about 1 to about 12 carbon atoms or from about 1 to about 5 carbon atoms recited in instant claims 15 and 16.

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and

potential 35 U.S.C. 102(e), (f), or (g) prior art under 35 U.S.C. 103(a).

11. Claims 1, 2, 7, 22-24, and 26 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US 4,600,673 (Hendrickson) combined with US 6,210,767 B1 (Knauf) and Grant & Hackh's Chemical Dictionary, fifth edition, pages 293, 503, and 531.

Hendrickson discloses a photoconductive imaging member comprising a conductive substrate, a photoconductive layer, and a topcoat comprising a cured film-forming silicone polymer. Col. 2, lines 45-48; col. 3, lines 36-58; and example 3 at cols. 10-11. The photoconductive layer may have a bilayer structure comprising a charge generating layer and a charge transporting layer. Col. 2, lines 62-67. The crosslinked silicone polymer is obtained by curing (i.e., crosslinking) the material marked with the trademark SYL-OFF 23, which is identified as a silanol terminated polydimethylsiloxane within the scope of formula II disclosed at col. 3, lines 40-59. See col. 10, lines 19-20. SYL-OFF 23 is also identified as a curable "silicone rubber" polymer. See Knauf, col. 3, lines 54-56.

Hendrickson further discloses an imaging process comprising the steps of (1) charging its imaging member and (2) imagewise exposing the charged imaging member to light to dissipate the charge on the areas exposed to light. Col. 1, lines 37-43, and

example 3, at col. 10, lines 57-59. Thus, Hendrickson demonstrates that its topcoat comprising the crosslinked silicone rubber marked with SYL-OFF 23 is "substantially transparent to activating radiation" as recited in instant claim 26.

Hendrickson does not disclose that its topcoat is electrically insulating or resilient as recited in instant claims 1, 2, and 26. However, as discussed above, Hendrickson's topcoat layer comprises the crosslinked silanol terminated polydimethylsiloxane marked with SYL-OFF 23, which is identified as a silicone rubber. The word "resilient" is commonly defined as "elastic, rebounding." The term "silicone rubber" is usually defined as "a silicone that retains its elastic properties between -50 and +291 [sic: no scale is provided]." See Grant & Hackh's Chemical Dictionary, pages 503 and 531. Thus, because a silicone rubber is defined as being elastic, it is reasonable to conclude that Hendrickson's crosslinked silicone rubber is also resilient. The burden is on applicants to prove otherwise. In re Fitzgerald, 205 USPQ 594 (CCPA 1980). Furthermore, Hendrickson's crosslinked silicone rubber does not appear to comprise any groups that would render it electrically conductive. Thus, it is reasonable to presume that Hendrickson's topcoat is also electrically insulating. The burden is on applicants to prove otherwise.

Instant claim 24 recites that the crosslinked silicone rubber prior to crosslinking is "dimethyl polysiloxane hydrolyzate." The term "hydrolyzate" is usually applied to a substance that has been obtained by hydrolysis. Hydrolysis is a decomposition reaction caused by water resulting in the formation of a hydroxy group. See Grant & Hackh's Chemical Dictionary, page 293. Thus, the dimethyl polysiloxane hydrolyzate recited in instant claim 24 is described in product-by-process format. Neither Hendrickson nor Knauf discloses that SYL-OFF 23 is a dimethylpolysiloxane hydrolyzate. However, as discussed supra, Hendrickson identifies SYL-OFF 23 as a silanol (-SiOH) terminated polydimethylsiloxane. In other words, SYL-OFF 23 has a terminal hydroxy group. Thus, SYL-OFF 23 appears to be the same or similar to the dimethyl polysiloxane hydrolyzate recited in instant claim 24. The burden is on applicants to prove otherwise. In re Marosi, 218 USPQ 289 (Fed. Cir. 1983); In re Thorpe, 227 USPQ 964 (Fed. Cir. 1985); MPEP 2113.

12. Claims 1, 2, 7, 13, 22-26 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US 5,556,730 (Nguyen) combined with Hendrickson, Knauf, and Grant & Hackh's Chemical Dictionary, fifth edition, pages 293, 503, and 531.

Nguyen discloses a positive charging photoconductive imaging member comprising a conductive substrate, a charge transporting layer, a charge generating layer, a charge injection barrier layer, and a release layer comprising a crosslinked silicone polymer. Col. 13, lines 1-12, and example 9 at col. 15. The charge transporting layer comprises an arylamine charge transport compound that is within the compositional limitation recited in instant claim 13. The charge injection barrier layer comprises a polyvinylbutyral resin and has a thickness of 0.5 μm. Col. 14, lines 30-43. The charge injection barrier layer is within the limitations recited in instant claims 22 and 23. The release layer has a layer thickness of 3 μm. Col. 13, lines 1-12. Nguyen further discloses that the thickness of the release layer may range from 1 to 8 μm, preferably from 3 to 5 μm. Col. 12, lines 1-4. The values of 5 μm and 8 μm are within the range of "about 5 to about 10 micrometers" recited in instant claim 25. The crosslinked silicone polymer is obtained by crosslinking the material marked with the trademark SYLOFF 23. Hendrickson identifies SYLOFF 23 as a silanol terminated polydimethylsiloxane within the scope of formula II disclosed at Hendrickson, col. 3, lines 40-59. See Hendrickson, col. 10, lines 19-20. SYLOFF 23 is also identified as a curable "silicone rubber" polymer. See Knauf, col. 3, lines 54-56.

Nguyen further discloses an imaging process comprising the steps of (1) charging its imaging member and (2) imagewise exposing the charged imaging member to light to dissipate the charge on the areas exposed to a laser Col. 13, lines 23-28. Thus, Nguyen demonstrates that its release layer comprising the crosslinked silicone rubber SYLOFF 23 is "substantially transparent to activating radiation" as recited in instant claim 26.

Nguyen does not disclose that its release layer is electrically insulating or resilient as recited in instant claims 1, 2, and 26. However, as discussed above, Nguyen's release layer comprises the crosslinked material with SYL-OFF 23. For the reasons discussed in paragraph 11, supra, which are incorporated herein by reference, it is reasonable to conclude that Nguyen's cross-linked silicone rubber is also resilient as recited in instant claims 1 and 2. Furthermore, it is reasonable to presume that Nguyen's release layer is also electrically insulating as recited in instant claims 1, 2, and 26. The burden is on applicants to prove otherwise.

Instant claim 24 recites that the crosslinked silicone rubber prior to crosslinking is "dimethyl polysiloxane hydrolyzate." For the reasons discussed in paragraph 11, supra, which are incorporated herein by reference, SYLOFF 23 appears to be the same or similar to the dimethyl polysiloxane hydrolyzate

recited in instant claim 24. The burden is on applicants to prove otherwise. Marosi, supra; Thorpe, supra; MPEP 2113.

13. Claims 1, 2, 6-9, 11-14, 20-24, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,287,737 B1 (Ong'737) combined with US 5,124,220 (Brown), Hendrickson, Knauf, and Grant & Hackh's Chemical Dictionary, fifth edition, pages 293, 503, and 531. Note that because Ong'737 qualifies as a reference under a 35 U.S.C. 102(a), as well as 102(e), it is available under 35 U.S.C. 103(a) and 103(c).

Ong'737 discloses a photoconductive imaging member comprising (1) a conductive substrate, (2) a hole-blocking layer, (3) an adhesion layer, (4) a charge generation layer, and (5) a charge transport layer. See example IV at cols. 29-30.

(1) The conductive substrate comprises a 75-μm thick titanized MYLAR substrate. Col. 29, line 44. The thickness is within the range of about 75 to about 275 μm recited in instant claim 6. Ong'737 further discloses that the substrate may be flexible, seamless, or rigid, and in the form of a plate, a cylinder, a scroll, or an endless belt, all of which are within the limitations recited instant claims 6 and 7. See Ong'737, col. 25, line 53, to col. 26, line 13.

(2) The hole-blocking layer comprises a crosslinked polymer that is within the compositional limitation of formula III

recited in instant claim 11. The hole-blocking layer has a thickness of about 0.5 to 0.7 μm, which is within the thickness range recited instant claim 8. Col. 29, lines 45-51. Ong'737 further discloses that the hole-blocking layer may have a thickness of about 0.001 to about 5 μm, preferably from about 0.1 to 5 μm. Col. 8, lines 22-25. The thickness value of about 0.1 μm is within the range of about 0.005 to 0.3 μm recited in instant claim 9.

(3) The adhesive layer has a thickness of 0.05 μm, which is within the range recited in instant claim 12. Col. 29, lines 52-55.

(4) The charge generation layer comprises hydroxygallium phthalocyanine dispersed in a film forming binder, which is within the compositional limitation recited in instant claim 20. The layer has a thickness of 0.2 μm, which is within the range of about 0.2 to 0.7 μm recited in instant claim 21. Col. 29, lines 55-60.

(5) The charge transport layer comprises aryl amine charge transport molecules that are within the compositional limitation of the formula recited in instant claim 14, and are dispersed in a binder resin. Col. 29, lines 60-65. Ong'737 discloses that the binder resin is a highly insulating and transparent resin. Col. 27, lines 40-41 and 54-62.

Ong'737 does not disclose that its imaging member further comprises an overcoat layer or a crosslinked silicone rubber as recited in instant claims 1 and 2.

Brown discloses a bilayer topcoat for organic photoconductive imaging members. Brown discloses that the bilayer topcoat comprises a polymeric barrier layer and a cross-linked silicone polymeric release layer. Col. 3, lines 60-63. Brown does not limit the type of photoconductive imaging member used. See col. 4, lines 45-47, which discloses that "organic photoconductive materials are well-known in the art, and the present invention is applicable to all such organic photoconductors." The crosslinked silicone polymeric release layer is the crosslinked material marked with the trademark SYL-OFF 23 described in Hendrickson. Col. 6, lines 20-24. The discussion of Hendrickson's release layer in paragraph 11, supra, is incorporated herein by reference. As discussed in paragraph 11, supra, the material marked SYL-OFF 23 is identified as a curable silicone rubber, and the releasing layer (or topcoat) comprising SYL-OFF 23 is "substantially transparent to activating radiation." For the reasons discussed in paragraph 11, supra, it is reasonable to conclude that the release layer disclosed by Hendrickson has the properties recited in instant claims 1, 2, and 26, and that SYL-OFF 23 appears to be

the same as the product recited in instant claim 24. The burden is on applicants to prove otherwise.

Brown discloses that its bilayer topcoat improves the removal of image toner as well as the excess or residual toner from the surface of the imaging member. Col. 4, lines 14-17. According to Brown, its bilayer topcoat protects the photoconductive imaging member and extends its useful life in imaging processes, in particular, processes involving liquid toners and thermally assisted toner transfer steps. Col. 1, lines 7-10, and col. 3, lines 64-67. The barrier layer protects the essential properties of both the organic photoconductor layer and the polymer release coating "by preventing or inhibiting the transport of material between these layers both during the manufacture of the photoconductor element and during its use within the electrophotographic process." Col. 4, lines 1-7.

It would have been obvious for a person having ordinary skill in the art to coat Brown's bilayer on the surface of the photoconductive imaging member disclosed by Ong'737, because that person would have had a reasonable expectation of successfully obtaining a photoconductive imaging member having the benefits disclosed by Brown.

14. Claims 1, 2, 6-9, 12-14, 20-24, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,871,877 (Ong'877)

combined with Brown, Hendrickson, Knauf, and Grant & Hackh's Chemical Dictionary, fifth edition, pages 293, 503, and 531.

Ong'877 discloses a photoconductive imaging member comprising (1) a conductive substrate, (2) a hole-blocking layer, (3) an adhesion layer, (4) a charge generation layer, and (5) a charge transport layer. See example III at cols. 20-21.

(1) The conductive substrate comprises a 75-μm thick titanized MYLAR substrate. Col. 20, line 59. The thickness is within the range of about 75 to about 275 μm recited in instant claim 6. Ong'877 further discloses that the substrate may be flexible, seamless, or rigid, and in the form of a plate, a cylinder, a scroll, or an endless belt, all of which are within the limitations recited instant claims 6 and 7. See Ong'877, col. 17, lines 45-61.

(2) The hole-blocking layer comprises a crosslinked polymer. The hole-blocking layer has a thickness of about 2 to 2.5 μm, which is within the thickness range recited instant claim 8. Col. 20, lines 60-66. Ong'877 further discloses that the hole-blocking layer may have a thickness of about 0.1 to about 5 μm. Col. 5, lines 20-21. The thickness value of about 0.1 μm is within the range of about 0.005 to 0.3 μm recited in instant claim 9.

(3) The adhesive layer has a thickness of 0.05 μm, which is within the range recited in instant claim 12. Col. 20, line 67, to col. 21, line 2.

(4) The charge generation layer comprises hydroxygallium phthalocyanine dispersed in a film forming binder, which is within the compositional limitation recited in instant claim 20. The layer has a thickness of 0.2 μm, which is within the range of about 0.2 to 0.7 μm recited in instant claim 21. Col. 21, lines 3-8.

(5) The charge transport layer comprises an aryl amine charge transport molecule that is within the compositional limitation of the formula recited in instant claim 14, and are dispersed in a binder resin. Col. 21, lines 8-12. Ong'877 discloses that the binder resin is a highly insulating and transparent resin. Col. 19, lines 15-16 and 28-40.

Ong'877 does not disclose that its imaging member further comprises an overcoat layer or a crosslinked silicone rubber as recited in instant claims 1 and 2.

Brown discloses bilayer topcoat for organic photoconductive imaging members. The discussion of Brown in paragraph 13 above is incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art to coat Brown's bilayer on the surface of the photoconductive imaging member disclosed by Ong'877, because that

person would have had a reasonable expectation of successfully obtaining a photoconductive imaging member having the benefits disclosed by Brown.

15. Claims 1, 2, 6-9, 12, 13, 17, 18, 20-24, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,316,880 (Pai) combined with Brown, Hendrickson, Knauf, and Grant & Hackh's Chemical Dictionary, fifth edition, pages 293, 503, and 531.

Pai discloses a photoconductive imaging member comprising (1) a conductive substrate, (2) a hole-blocking layer, (3) an adhesion layer, (4) a charge generation layer, and (5) a charge transport layer. See example VII at cols. 24-25

(1) The conductive substrate comprises a polyethylene terephthalate film coated with a titanium layer. Col. 24, lines 46-49. Pai further discloses that the substrate may be endless flexible belt, a web, a rigid cylinder, or a sheet, all of which are within the limitations recited instant claims 6 and 7. See Pai, col. 5, lines 10-13. The flexible belt may have a thickness of about 125 μm, which is within the range recited in instant claim 6. Col. 5, lines 16-17.

(2) The hole-blocking layer has a thickness of 100 Angstroms (i.e., 0.01 μm). Col. 24, lines 50-53. The thickness is within the ranges recited in instant claims 8 and 9.

(3) The adhesive layer has a thickness of 50 Angstroms (i.e., 0.005 μm), which is within the range recited in instant claim 12. Col. 24, lines 53-55.

(4) The charge generation layer comprises a vanadyl phthalocyanine dispersed in a film forming binder. The layer has a thickness of about 1 μm, which reads on the thickness of "about 0.7 μm" recited in instant claim 21. Col. 24, lines 56-61. Pai also discloses that the charge generation layer may have a preferred thickness of about 0.3 to about 3 μm. Col. 7, lines 58-59. The thickness of about 0.3 μm is within the range of about 0.2 to about 0.7 μm recited in instant claim 21.

(5) The charge transport layer comprises aryl amine charge transport molecules dispersed in a polyethercarbonate transport polymer. Col. 24, lines 60-66. The polyethercarbonate is within the compositional limitations recited in instant claims 17 and 18.

Pai does not disclose that its imaging member further comprises an overcoat layer or a crosslinked silicone rubber as recited in instant claims 1 and 2. However, Pai discloses that its imaging member may comprise an overcoat layer to improve the resistance to abrasion. Col. 20, lines 54-55. Pai further discloses the overcoating layer is well-known in the art. Col. 20, lines 58-59.

Brown discloses bilayer topcoat for organic photoconductive imaging members. The discussion of Brown in paragraph 13, supra, is incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art to coat Brown's bilayer on the surface of the photoconductive imaging member disclosed by Pai, because that person would have had a reasonable expectation of successfully obtaining a photoconductive imaging member having the benefits disclosed by Brown.

16. Claims 1-5, 7, 13, 14, 21, and 22-26 are rejected under 35 U.S.C. 103(a) as being unpatentable US 4,251,612 (Chu) combined with Nguyen, Hendrickson, Knauf, and Grant & Hackh's Chemical Dictionary, fifth edition, pages 293, 503, and 531,

Chu discloses a positive charging photoconductive imaging member comprising (1) a substrate, (2) a charge injecting layer, (3) a charge transport layer, and (4) a charge generation layer, and (5) an insulating organic overcoat layer. See example 1 at cols. 10-11.

(1) The substrate has a thickness of about 125 μm, which is within range recited in instant claim 6. Col. 10, line 55. Chu further discloses that the substrate may be flexible or rigid, and may be configured as a plate, a cylindrical drum, a scroll, or an endless flexible belt, all of which are within the

limitations recited in instant claims 6 and 7. Col. 4, lines 38-42.

(2) The charge injecting layer comprises carbon black dispersed in an adhesive polymer. Col. 10, lines 49-54. The charge injecting layer is within the compositional limitations recited in instant claims 4 and 5.

(3) The charge transport layer comprises aryl amine molecules that are within the compositional limitation of the formula recited in instant claim 14, and are dispersed in a binder resin. Col. 10, lines 57-64. Chu further discloses that the binder resin is a highly insulating and transparent organic resin. Col. 6, lines 34, and col. 7, lines 4-20.

(4) The charge generation comprises amorphous arsenic triselenide and has a thickness of about 0.6 μm. Col. 10, line 64. The thickness of about 0.6 μm is within the range of about 0.2 to about 0.7 μm recited in instant claim 21. Chu further discloses that the charge generation layer may comprise organic charge carrier materials such as phthalocyanines. Col. 7, lines 32-45, and example VIII at cols. 12-13.

Chu does not disclose that its imaging member comprises a crosslinked silicone rubber as recited in instant claims 1 and 2. However, Chu discloses that the insulating organic overcoat layer (1) protects the charge generation layer from being contacted by toner and ozone which is generated during the imaging cycles.

Col. 7, lines 49-52. The overcoat layer must also (2) prevent charges from penetrating through it into the charge generation layer or being injected into it by the latter. Col. 7, lines 52-55. Chu further discloses that the overcoat layer typically has (3) a thickness from about 5 to about 25 μm. Col. 7, lines 49-50. Chu discloses that the material selected to make up said overcoat layer (4) should not be one which will dissolve or react with the materials in the charge generation layer and the charge transport layer. Col. 7, lines 66-68.

Nguyen discloses an overcoat layer for positive charging organic photoconductors comprising a charge injection barrier layer and a release layer comprising a crosslinked silicone rubber marked SYLOFF 23. The discussion of Nguyen's charge injection barrier layer and release layer in paragraph 12, supra, is incorporated herein by reference. As discussed in paragraph 12, supra, the releasing layer is "substantially transparent to activating radiation." For the reasons discussed in paragraph 12, supra, it is reasonable to conclude (1) that the release layer disclosed by Nguyen is electrically insulating and resilient as recited in instant claims 1, 2, and 26, and (2) that SYL-OFF 23 appears to be the same as the product recited in instant claim 24. The burden is on applicants to prove otherwise.

As discussed in paragraph 12 above, Nguyen further discloses that the thickness of the release layer may range from 1 to 8 μm, preferably from 3 to 5 μm. Col. 12, lines 1-4. The values of 5 μm and 8 μm are within the range of "about 5 to about 10 micrometers" recited in instant claim 25, and within the thickness range (3) taught by Chu.

According to Nguyen, charge instability may be caused by the chemically vulnerability of the positive charging photoconductors, e.g., TYPE III photoconductors where the charge generation layer is coated over the charge transport layer, to operating conditions such as corona charging, ozone attack, humidity, etc. Because the charge generation layer is exposed to a corona during charging, it is expected that the photoconductor is more likely to exhibit deteriorated charge characteristics due to surface charge injection into the bulk of the photoconductor. Col. 3, lines 24-35. Nguyen discloses that its barrier layer solves the charge stability problem of positive charging photoconductors and provides photoconductors with long-life with more than 50,000 good cycles under severe test conditions. Col. 4, lines 22-23 and 27-29, and example 4. Nguyen discloses that its barrier layer is capable of prohibiting the injection of unwanted positive charge from the surface of the photoconductor into the bulk of the photoconductor without stopping the migration of negative charge from the photoconductor bulk to the

surface. Col. 4, lines 6-14. Nguyen discloses that its barrier layer is robust enough in the operating environment to withstand high humidity and high temperatures. Col. 4, lines 17-18. Nguyen discloses that its charge injection barrier layer prevents the poisoning of the photoconductor by the leaking of crosslinking catalyst or the other chemicals from the release layer of polysiloxanes. Col. 4, lines 2-5. Nguyen further discloses that the release layer improves the toner transfer efficiency. Col. 3, lines 1-4. Thus, Nguyen's charge injection barrier satisfies Chu's requirements (1), (2), and (4).

It would have been obvious for a person having ordinary skill in the art to coat Nguyen's charge injection barrier layer and release layer on the surface of the photoconductive imaging member disclosed by Chu, because that person would have had a reasonable expectation of successfully obtaining a long-life photoconductive imaging member having charge stability under conditions of high humidity and high temperature.

17. Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record does not teach an imaging member comprising a hole blocking layer comprising "a crosslinked

polysiloxane polymer network impregnated with a hydroxy-functionalized polymer and photogenerating pigments" as recited in instant claim 10.

As discussed in paragraph 13 above, Ong'737 discloses a crosslinked polysiloxane polymer of formula (III) as recited in instant claim 11. Ong'737's crosslinked polysiloxane polymer forms a network impregnated with hydroxy-containing polymers. However, Ong'737 does not disclose that its crosslinked polysiloxane polymer is also impregnated with photogenerating pigments as recited in instant claim 10.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (703) 308-3625. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Mark Huff, can be reached on (703) 308-2464. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9311 (Rightfax) for after final faxes, and (703) 872-9310 for other official faxes.

Any inquiry of papers not received regarding this communication or earlier communications should be directed to Supervisory Application Examiner Ms. Palestine Jenkins, whose telephone number is (703) 308-3521.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

JANIS L. DOTE
PRIMARY EXAMINER
GROUP ~~1500~~ 1700

JLD
April 21, 2003